Work Order II July-17-12 1:12:58 P				*878	386*						Page 1
Item ID: D212 Revision ID:	-664-101TRN		,	Accept	*N900	040	100)* s	etup Sta	1 🚺	S1*
Item Name: Cross	tube Turning Deta	ıil							Sto	^p *N;	S2*
Required Date: 31/07		Qty: 1.00 Qty: 1.00	*1* *1*		Cust Item 1 Customer:	D:					
Approvals: Prod	cess Plan:/	n.5	Date: 12/07/	_(→Tooling:	D	ate:		R	Run Sta	1/1	R1*
			Date:	SPC (Y/N):	D	ate:			Sto	*N	R2*
Sequence ID/ Work Center ID	Operat Descri			Set Up/ Run Hours	Tool ID	Tool#	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nb	r			· · · · · · · · · · · · · · · · · · ·						
D212-664-141	Rev D (DEC))									
100	MORI S	EIKI CNC LATH	E LARGE	0.00							••
Mori Seiki Mori Seiki CNC Lathe Larg	ge	Memo 1-Fill tube wi	th sand & install plugs l	0.00 DT8534 on both ends as pe	er Folio FA113						Commic
	A PTO		ide as per Folio FA113 ition lines only, **do no	ot sand whole tube**:							12/07/15
		*Use mill bas	stard file, brush file repe andpaper coarser than 3								
*110 *110*	QC1- In:	spect dimensions	to dimension sheet	0.00				i	A	•	A .
QC Quality Control		Memo		0.00					<u> </u>		maril

NCD.	V	,	N.1 -
NCR:	Yes	/	No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: Date: (7/67/27

								. =-		QA Closed:	Date	12/7/27
Work Orde	r: 87	188	6		DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	, \
			_		Rework	1		Skid-tube	Crosstube		Water Jet	Engineering
	o.D212-				Scrap		I	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
	o. P315	2 16	23	1	Use-as-is]	Thern	noforming	Finishing	Rec/Stor	e/Packaging	Other
NCR N	o. D. 212	COLO	} - *() (TRN	Work Order Update			Large Fab	Composite		Supplier] []
	- ,					,_ _						
Root	_	_	_		ption of work order update	1	nitial		tion	Sign &		
Cause	Date	Step	Qty	(or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data	_	, , , , ,	,	O.D.	at base of both			1				1
Equip/Tooling	12/7/23	100		Culto	or conditions		OVS	Hecest	ola	DAS		
Operator	-			(1)	13 black tolerance 135 /2.737). tapers to 2.740 top of cuff.		0AS 12 /7/23	, Accept.		DAS 12		- 50
Material	\dashv			(2.1	5) [2.737].	iz	17/27			0-89		1000
Setup Other	-			O.D.	tapers to 7.740		11/27			12/1/23	12-724	16 16 110024
Process	_			61	times or						224	Motor
Supplier	\dashv			', '	1 9 04 CUH,						121	(le
Training	-	,									`	
Unapproved	┪											
		l			F	AUL	T CATE	GORY				
Landin	g Gear				General				···			
· [Bending				Bend		Grain			Ovalized		Pressure/Forced
	Centre No	ot Conce	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
Ţ	Cracks				Broken/Damaged		Inspect	on Incomplete		Part Incorre	ct	Weld
	Crushed/	Crimped.			Burrs		Instruct	ions Incomplete/	'Unclear	Part Lost/Mi	ssing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte	nance		Part Moved	, <u>–</u>	_
	Heat Trea	at			Countersink		Mislabe	led		Positioned V	Vrong	_
Inspection Strip in Tube Cut Too					Cut Too Short		Misread	i		Power Loss/	Surge	Other
	Ripples in	Bend			Drill Holes		Offset		 .			
	Torque W	/aves in E	xtrusio	י 🗀	Drawing		Out of (Calibration			· ————	
[Turning S	equence			Finish		Out of 9	Sequence				
	Wave/Tw	ist in Tub	е		Folio		Outside	Dimensions				

July-17-12 1:12:58 PM

Item ID: Revision ID: Item Name:	D212-664-10		<u></u>	Accept	*N900	040	100)* s	Setup Start	ı VI.	S1* S2*
Start Date: Required Date	17/07/2012 : 31/07/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1 ³ *1 ³		Cust Item 1 Customer:	D:					
Reference:			•								
Approvals:	Process Pla	ın:	Date:	Tooling:	D.	ate:	· .	F	Run Start	I <i>N</i>	R1*
	QC:		Date:	SPC (Y/N):	D	ate:			Stop	*N	R2*
Sequence ID/ Work Center I	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
*120		MORI SEIKI CNC LAT	THE LARGE	0.00				1	6		
Mori Seiki Mori Seiki CNC L	athe Large	2-Blend tra *Use mill b *Do not use FOLIO RE DWG REV	estard file, brush file e sandpaper coarser th V:	do not sand whole tube**: repeatedly with file card.					<i></i>		9na 12f
*130 *130*		QC1- Inspect dimension	ns to dimension sheet	0.00				ſ	Ø.		
QC Quality Control		Memo + PERFOR	M ULTRA SONIC N	0.00 MEASUREMENT					J	gr is	19m/L 107/19

				DQA:	Date:	
NCR:	Yes /	No	WORK ORDER NON-CONFORMANCE / UPDATE		_	

									QA Closed:	Date:	
Work Orde	er:		· ·		DISPOSITION			AGAINST DI	EPARTMENT	/PROCESS	
Part N NCR N	No	:			Rework Scrap Use-as-is Work Order Update	Ther	Skid-tube Machining moforming Large Fab	Crosstube Small Fab Finishing Composite	-4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Descri	ption of work order update	Initial	Ad	ction	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chief Eng	Desc	cription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved				· · · · · · · · · · · · · · · · · · ·							
	y de la companya de		· {;			AULT CAT	EGORY				
Landir	Bending Centre N Cracks Crushed/ Cuffs Heat Trea Inspectio Ripples ir	ot Concer Crimped at n Strip in i Bend	Tube	n sala	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes Drawing	Instruction Maint Mislat Misrea Offset	rare tion Incomplete ctions Incomplete, tenance peled ad		Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned V	oct sissing Wrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	Turning S	equence	\$		Finish		Sequence				
1 1	Wave/Tu	ist in Tub	ne 🖊	57.5	Folio	I lOutsic	le Dimensions				

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Page 3

July-17-12 1:12:58 PM

Item ID:

D212-664-101TRN

Accept

N900040100

Setup Start

Revision ID:

Start Date:

Item Name: Crosstube Turning Detail

Required Date: 31/07/2012

Start Oty: 1.00 17/07/2012

Req'd Qty: 1.00

Cust Item ID:

Customer:

Reference:

Approvals:

Process Plan: Date: Tooling:

Date:

SPC (Y/N):

Date:

Date:

Run

Sequence ID/ Work Center ID Operation **Description** Set Up/ **Run Hours** Tool ID

Tool # Plan

Reject

Stop

Insp.

140 *140*

Quality Control

Memo

QC8- Inspect parts - second check

0.00

0.00

+ CHECK ULTRA SONIC MEASUREMENT AND ORIENTATION FOR

BENDING

145

Crosstubes

Memo

Crosstubes

0.00

0.00

GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

150

150 HandFXtube

Hand Finishing Crosstubes

Memo

0.00

0.00

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ACID ETCH X-TUBE INSIDE AND OUT, USE RED SCOTCH BRITE

Accept Code

Qty

Reject Number Stamp

NCR:	Yes /	No	M

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____Date: ____

INCK. I	es / NO				WORK ORDER NON-C		VIAITOL / OF		QA Closed:	Date	e:
Work Orde	ır.	·			DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
Part N					Rework Scrap		Skid-tube Machining	Crosstube Small Fab	Pro	Water Jet d. Eng. Coor.	Engineering Quality
NCR N					Use-as-is Work Order Update	Therr	noforming Large Fab	Finishing Composite		re/Packaging Supplier	Other
Root				Descri	ption of work order update	Initial	Act	tion	Sign &		
Cause	Date	Step	Qty	(or Non-conformance	Chief Eng	Desci	ription	Date	Verification	QC Inspector
Doc/Data											
Equip/Tooling											
Operator						1					
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved		<u> </u>									
					FA	AULT CATE	GORY				
Landir	ng Gear			_	General				1	-	$\overline{}$
	Bending				Bend	Grain			Ovalized		Pressure/Forced
	Centre N	ot Conce	ntric to (o/s	BOM/Route	Hardwa			Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged	Inspect	ion Incomplete		Part Incorre	ct	Weld
]	Crushed	/Crimped			Burrs	Instruc	tions Incomplete/	Unclear	Part Lost/Mi	issing	Wrong Stock Pulled
	Cuffs				Contamination	Mainte	enance		Part Moved		
Į	Heat Tre	at		· L	Countersink	Mislabe	eled		Positioned V	Vrong	
	-	on Strip in	Tube	<u></u>	Cut Too Short	Misread Power Loss/Surge Other					Other
	Ripples i	n Bend			Drill Holes	Offset					
	Torque V	Vaves in E	xtrusio	n	Drawing	Out of	Calibration				
	Turning 9	Sequence			Finish	Out of	Sequence				
	Wave/Tv	vist in Tul	oe -		Folio	Outside	e Dimensions				

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July-17-12 1:12:58 PM

July-1/-12 1:12	2:38 PM 							
Item ID: Revision ID:	D212-664-1			Accept	*N90004	.0100*	Setup Start Stop	*NS1*
Item Name: Start Date: Required Date: Reference:	Crosstube Tui 17/07/2012 31/07/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item ID: Customer:		ж	*NS2*
Approvals:	Process Pla	an:	Date:	Tooling:	Date:		Run Start	*NR1*
	QC:		Date:	SPC (Y/N):	Date:		Stop	*NR2*
Sequence ID/ Work Center II	D	Operation Description		Set Up/ Run Hours	Tool ID Too	ol # Plan Acce Code Qty		Reject Insp. Number Stamp
*160 *160* QC Quality Control		QC5- Inspect part comp	leteness to step on W/O	0.00			12-7-2	23
170 *47 0 *		Packaging		0.00				
170 Packaging Packaging		Memo	d Stock in kanban rack <u>C</u> G	0.00		_K	M 12-	7-23
180		QC21- Final Inspection	- Work Order Release	0.00			nh	124 4
*1 A \ C \ QC \ Quality Control		Memo		0.00			[0^-]_'	124 AR)
								12-0,1-2

										DQA:	Date:	
NCR: Y	es / No				WORK ORDER NON-C	ON	NFORI	MANCE / UP	DATE	QA Closed:	Date:	
Work Orde	r:				DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part N NCR N	0.				Rework Scrap Use-as-is Work Order Update Skid-tube Machining Machining Small Fab Thermoforming Large Fab Composite				Small Fab Finishing		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Descri	ption of work order update	1	nitial	Ac	tion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Ch	nief Eng Description			Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling												
Operator		l										
Material												
Setup					•							
Other												
Process				,	•							1

			FAUI	T CATEGORY		
Landing	Gear	General				
	Bending	Bend		Grain	Ovalized	Pressure/Forced
	Centre Not Concentric to O/S	BOM/Route		Hardware	Over/Under tolerance	Temperature/Cure
	Cracks	Broken/Damaged		Inspection Incomplete	Part Incorrect	Weld
	Crushed/Crimped.	Burrs		Instructions Incomplete/Unclear	Part Lost/Missing	Wrong Stock Pulled
	Cuffs	Contamination		Maintenance	Part Moved	
. [Heat Treat	Countersink		Mislabeled	Positioned Wrong	
	Inspection Strip in Tube	Cut Too Short		Misread	Power Loss/Surge	Other
	Ripples in Bend	Drill Holes		Offset		
	Torque Waves in Extrusion	Drawing		Out of Calibration		
	Turning Sequence	Finish		Out of Sequence		
. [Wave/Twist in Tube	Folio		Outside Dimensions		_

Supplier Training Unapproved

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Picklist Print

July-17-12 1:13:02 PM

Work Order ID: 87886

87886

Parent Item:

D212-664-101TRN

D212-664-101TRN

Parent !tem Name: Crosstube Turning Detail

Start Date: 17/07/2012

Required Date: 31/07/2012

Page 1

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:A 08-03-06 new issue DD verified by:ec

IPP Rev B 08.04.02 removed Polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6005-128		Manufactured	No			120	Each	12.0000	1	1			
D6005-13	28								**				

コラロロコーエノム

Crosstube Material

Location Loc Qty Loc Code LG 12 12

NCR:	Yes	/	No	

WORK ORDER NON-CONFORMANCE / UPDATE

DQA:	Date:	

					•		,		QA Closed:	Date:		
Work Orde	or.				DISPOSITION			AGAINST DE	PARTMENT	/PROCESS		
WOIR OIG					Rework	7	Skid-tube Crosstube Water Jet Engine					
Part N	No.				Scrap	1	Machining Small Fab			d. Eng. Coor.	Quality	
				 .	Use-as-is	Ther	moforming	Finishing	-∤	re/Packaging	Other	
NCR N	No				Work Order Update]	Large Fab	Composite	·	Supplier		
			1. 35									
Root				Desc	ription of work order update	Initial	1 .	ction	Sign &	•	·	
Cause	Date	Step	Qty		or Non-conformance	Chief Eng	Des	cription	Date	Verification	QC Inspector	
Doc/Data			,									
Equip/Tooling												
Operator				. Š				•				
Material												
Setup												
Other			3							·		
Process Supplier			3									
Training					.*							
Unapproved												
опарриотса	L I	1	1	J		AULT CATI	GORY	-	1			
Landi	ng Gear				General							
	Bending				Bend	Grain		. [Ovalized		Pressure/Forced ·	
	Centre No	ot Concer	ntric to	o/s	BOM/Route	Hardw	are		Over/Under	tolerance	Temperature/Cure	
	Cracks			Γ	Broken/Damaged	Inspec	tion Incomplete		Part Incorre	ct	Weld	
	Crushed/	Crimped.			Burrs		tions Incomplete	/Unclear	Part Lost/M	issing	Wrong Stock Pulled	
i	Cuffs				Contamination	Maint	enance	3 , -3, 2	Part Moved			
	Heat Trea	it.			Countersink	Mislab	eled		Positioned \	Wrong		
	Inspection		Tube		Cut Too Short	Misrea			Power Loss,	·	Other	
	Ripples in		_		Drill Holes	Offset				*		
	Torque W			n ^ L	Drawing	F	Calibration					
	Turning S	-			Finish	Out of Sequence						
	Wave/Tw	ist in Tuk	oe -		Folio	Outside Dimensions						

DART AEROSPACE LTD	Work Order:	87886
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: D		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	spection Sheet wing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments	
	0.200	+/-0.010	.200	/		vern	CWC-08	1
	R0.063	+/-0.010	1063	7		Ala	i .	1
	2.740	+0.005/-0.000	2.740	/	×	vern	CNO-8 2.73	10
	5.097	+/-0.030	5.097	1				7
ſ	2.304	+0.005/-0.000	2.309					12/7/
EA	2.340	+0.005/-0.000	2:343	1				1 "
	2.398	+0.005/-0.000	2.403	7				
SIDE	2.448	+0.005/-0.000	2.453	7				1
8	2.498	+0.005/-0.000	2.503	_				1
	2.549	+0.005/-0.000	2.554	_				1
	2.599	+0.005/-0.000	2.604					1
	2.671	+0.005/-0.000	2.673	/				1
	2.701	+0.005/-0.000	2.704	/		V		
	0.200	+/-0.010	200			vern	CNC-08	1
	R0.063	+/-0.010	.063			RG		1
	2.740	+0.005/-0.000	2.742		χ	vern	CACC-08 77	27 16
	5.097	+/-0.030	5.097			1	CWC-08 2.7	7/9
	2.304	+0.005/-0.000	2.309	. /				12/7
_ [2.340	+0.005/-0.000	2.343	7				1
E B	2.398	+0.005/-0.000	2.403	/				1
SIDE	2.448 🕺	+0.005/-0.000	2.453					1
	2.498	+0.005/-0.000	2.563	/				
	2.549	+0.005/-0.000	2.554	/			-	
	2.599	+0.005/-0.000	2.604					
. [2.671	+0.005/-0.000	2.673					
	2.701	+0.005/-0.000	2.704	/		\		
Γ	126.514	+/-0.020	126.514		i	type	966-22	

NCR:	Yes	/ No		,		WORK ORDER NON-O	100	NFORM	MANCE / UPDATE					• •
											QA Closed:	Dat	e:	•
Work Orde	er:					DISPOSITION		AGAINST DEPARTMENT/PROCESS						
Part No. NCR No.					· · ·	Rework Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Large Fab Composite		Pro	Water Jet E Prod. Eng. Coor. Rec/Store/Packaging Supplier		Engineering Quality Other			
Root Cause		Date	Step	Qty		ption of work order update or Non-conformance	1	Initial nief Eng	Action Description		Sign & Date	Verification		QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved					•				•			,		
							AUL	T CATE	GORY					
Landi	Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend Torque Waves in Extrusion		General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes Drawing	Instruct Mainte Mislabe Misread Offset		dware lection Incomplete ructions Incomplete/Unclear intenance labeled read		Ovalized Over/Under tolerance Part Incorrect Part Lost/Missing Part Moved Positioned Wrong Power Loss/Surge			Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other			

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

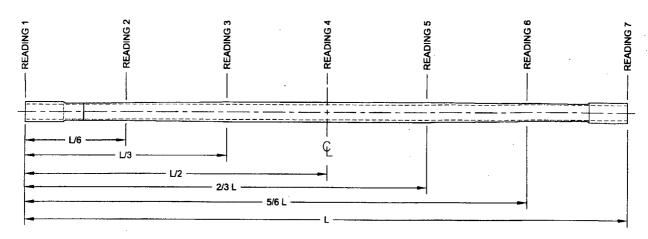
Wave/Twist in Tube

Finish Folio

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DART AEROSPACE LTD	Work Order:	8 te 86
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: D		Page 2 of 2

WALL THICKNESS MEASUREMENT



	WALL	THICKNESS	MEASUREMEN	NT (IN)	Deviation		
Location	w1	w2	w3	w4	Δw (max-min)	TOLERANCE	
READING 1 L= 0"	.373	.384	.461	.385	-028		
READING 2	,204	-205	.239	-225	-035		
READING 3	.301	,291	373	-313	-077		
READING 4	,385	.394	.394	.379	.015	0.048"	
READING 5	, 295	3710	4311	296	-016		
READING 6 L= 15	,209	-220	.225	,210	-011		
READING 7 L= CULF	.375	.384	.394	.381	-015		

Ca	lih	ratio	on l	R _A	enit
$\sim a$			OH 1	Λе:	ъшн

	Actual	Block	Thickness:	
itoccan	250 Maa	eurad	Thickness:	

Measured by: Audited by: **Preliminary Approval:** Date: Date: Date: 12-07-

Rev	Date	Change	Revised by	Approved
Α	05.04.27	New Issue (P/O D412-664-101)	KJ/JLM	
В	06.03.15	Tolerance revised for 5.097 per Dwg Rev update	KJ/JLM	
С	07.05.28	Dwg Rev updated	KJ/JLM	
D	10.02.02	Dimension 126.514 was 126.51	KJ , A	
Ε	12.06.04	Wall thickness form added	KJ (X)	N/

NCR:	Yes /	' No				WORK ORDER NON-	വ	NEORI	MANCE / LIP	DΔTF			
. NCIX.	103 /					WORK ORDER NOW		1. OIII	VIAITEL / OI		QA Closed:	Date:	
Work Orde	or.					DISPOSITION	AGAINST DEPARTMENT/PROCESS						
Part No. NCR No.						Rework Scrap Use-as-is Work Order Updațe		Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Composite		Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier		Engineering Quality Other	
Root					Descri	ption of work order update		Initial	Ac	tion	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Ct	nief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved							A111	T CATE	CORV			·	•.
Landi	C						AUI	LT CATE	GORY				
Landi	ing Ge	ar ending				General Bend Grain Ovalized				Pressure/Forced			

Hardware

Maintenance

Out of Calibration

Out of Sequence

Outside Dimensions

Mislabeled

Misread

Offset

Inspection Incomplete

Instructions Incomplete/Unclear

BOM/Route

Contamination

Countersink

Cut Too Short Drill Holes

Drawing

Finish Folio

Burrs

Broken/Damaged

DOA:

Over/Under tolerance

Part Incorrect

Part Moved

Part Lost/Missing

Positioned Wrong

Power Loss/Surge

Temperature/Cure

Wrong Stock Pulled

Weld

Other

Date:

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Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Cracks

Cuffs

Heat Treat

Crushed/Crimped.

Inspection Strip in Tube

Torque Waves in Extrusion

Centre Not Concentric to O/S

Item	Qty -141	Qty -141B	Part Number	Description
1	x		D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		Х	D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3	1	1	D6005-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	4	4	MS21920-25	CLAMP (OR MS21920-26)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

С

- 1) MATERIAL: MANUFACTURED FROM D6005-128 FINISHED LENGTH = 126.514±0.020
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- WEIGHT: D212-664-141 = 33.6 lbs (PER IIN-D212-664)
 - D212-664-141B = 33.6 lbs (PER IIN-D212-664)
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY **RETURN TO ENGINEERING** UNCONTROLLED COPY SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

TREMOVED FROM UNDER REVIEW PER

DEO ATTACHED

REFORMAT/REVISE GENERAL NOTES/PART LIST: 09.09.30 REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4 REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 07.03.08 6398, CUSHION, REVERSE CLAMPS ADD HOLES FOR COMPATABILITY WITH BHT/AA 05.02.04 SKIDTUBES NEW ISSUE Α 00.12.12 REV. DESCRIPTION BY DATE DESIGN **DART AEROSPACE LTD** DRAWN HAWKESBURY, ONTARIO, CANADA CHECKED DRAWING NO. REV. D MFG. APPR. D212-664-141

DE APPR. DATE

APPROVED

09.09.30

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XTUBE ASS'Y (205/212/412 HI FWD)

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TITLE

SHEET 1 OF 4

SCALE

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Offset

Out of Calibration

Outside Dimensions

Out of Sequence

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

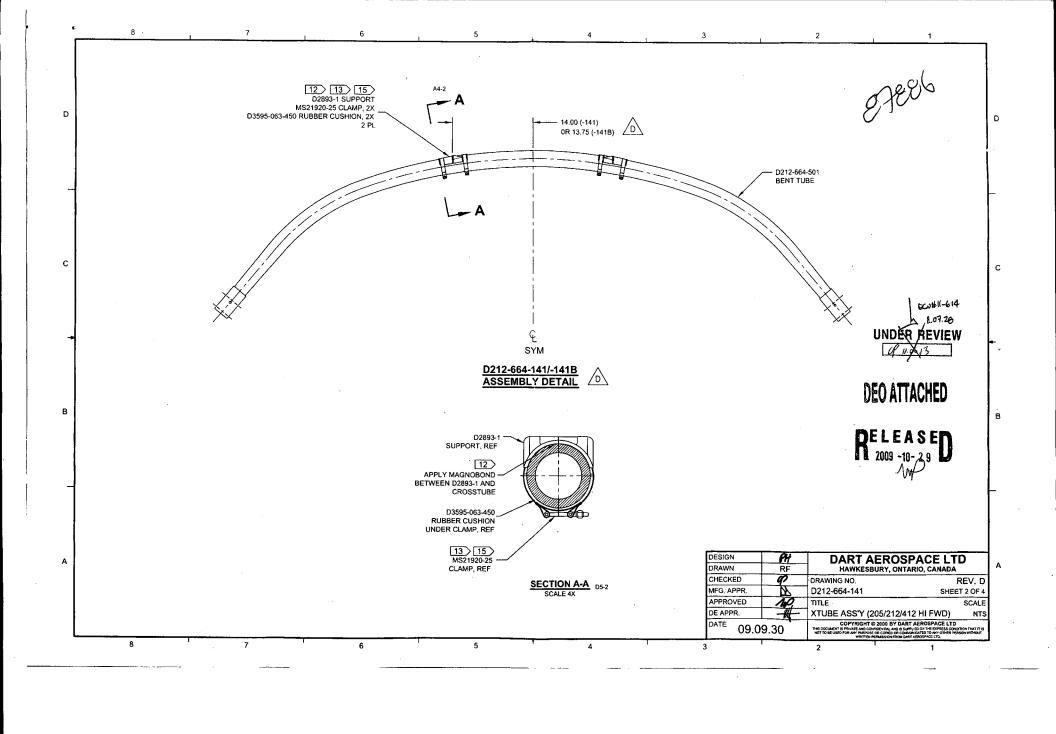
Torque Waves in Extrusion

Drill Holes

Drawing

Finish

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Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

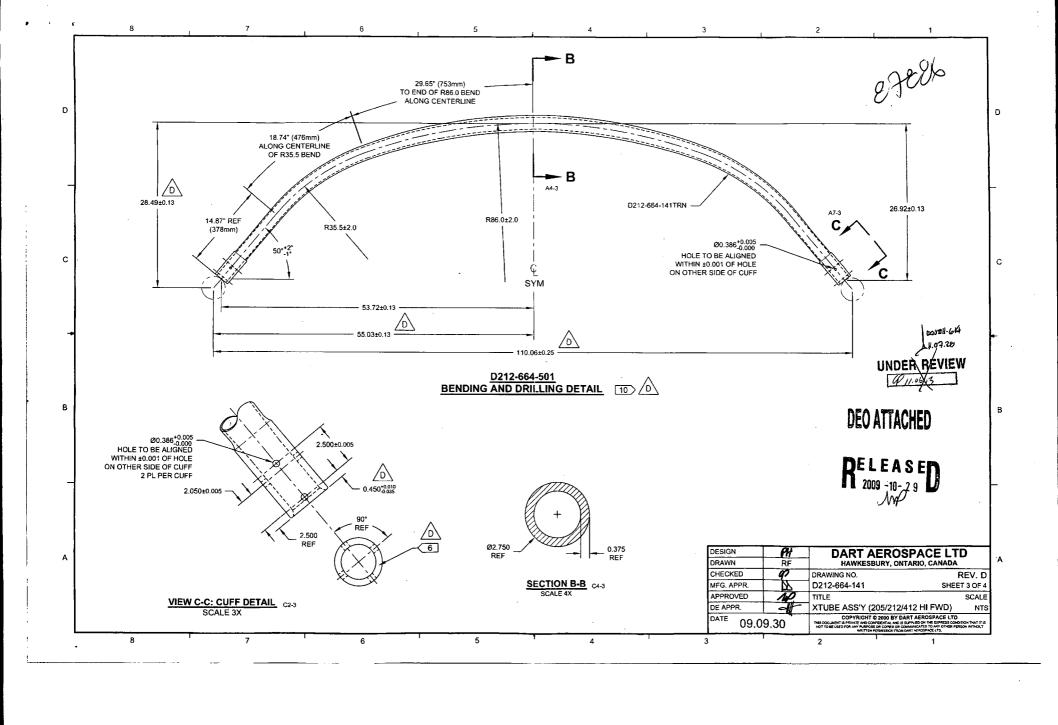
Torque Waves in Extrusion

Drill Holes

Drawing

Finish

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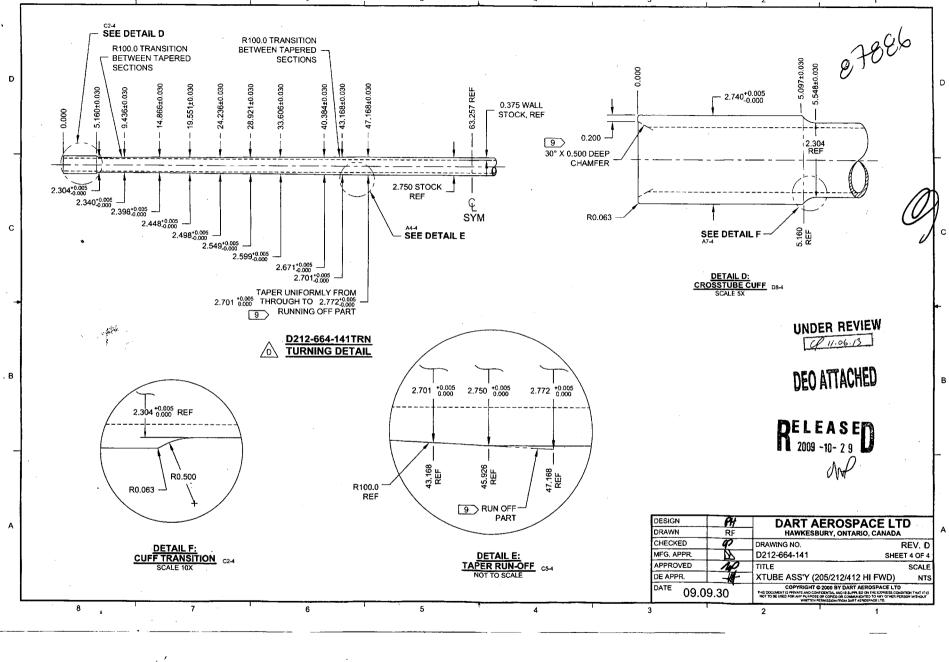


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		Ripples in	Bend				Drill Holes		Offset	***			·		
		Torque W	aves in E	xtrusio	n		Drawing		Out of (Calibration	profession			and the same	* .
		Turning Se	equence				Finish		Out of 9	Sequence					

Outside Dimensions

Wave/Twist in Tube

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NCR:	Yes	/	No

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		Turning Se	anuanca		- 1		Finish		Out of	Seguence				

Outside Dimensions

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Wave/Twist in Tube

87886

DRAWING NO.	TITLE	,	REV. D	DART AEROSPACE L	TD	D.E.O. NO.		SHEET NO.	SCALE
D212-664-141	XTUBE ASS	Y (205/212/412	HI FWD)	ENGINEERING ORDE	R	D212-664-1	41-D-1	SHEET 1 OF 2	NTS
DRAWN	A	CHECKED	P	MFG. APPR.	AF	PPROVED ./	W,	DE APPR.	
DATE 11.04	.07	DATE	11.07.11	DATE 11.04.12	D/	ATE)1	104/12	DATE 11.04	.12

PURPOSE:

ADD AN INSPECTION WINDOW TO UNDERSIDE OF CROSSTUBE.

CHANGE:

NOTES 2 OF SHEET 1 IS AMENDED AS FOLLOWS:

IS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND

PAINT OUTSIDE PER DART QSI 005 4.2 REMOVE MASKING AND APPLY CLEAR COAT

WAS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

PAINT OUTSIDE PER DART QSI 005 4.2

DELEASED 2011 -04- 18

UNDER REVIEW

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											DQA:	Date:	
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Work Ord	er.					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part I	- . No.					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update		Initial	Act	ion	Sign &		
Cause		Date	Step	Qty	C	or Non-conformance	Ch	nief Eng	Descr	iption	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved													
						F.	AUL	LT CATE	GORY				
Landi		Bending Centre No Cracks Crushed/O Cuffs Heat Trea Inspection	Crimped. t n Strip in		o/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Instruct Mainte Mislabe Misreac	on Incomplete ions Incomplete/L nance led		Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V	ct sssing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
		Ripples in	Bend			Drill Holes	1	Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

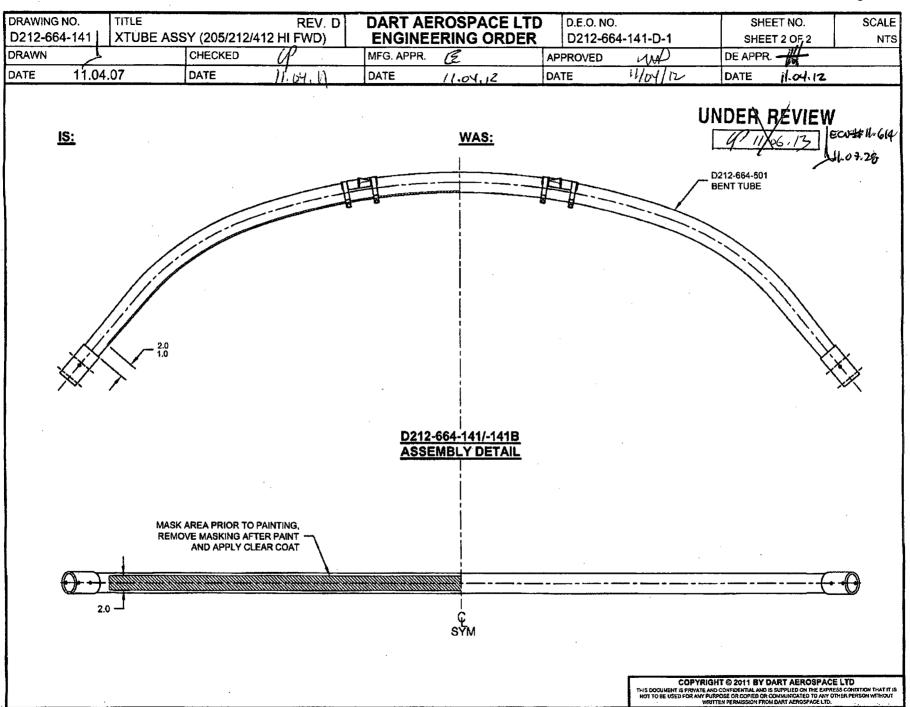
Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

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Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

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87EE6

DRAWING NO.	TITLE REV. D	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D212-664-141	CROSSTUBE ASS'Y (205 HI FWD)	ENGINEERING ORDER	D212-664-141-D-2	SHEET 1 OF 1	NTS
DRAWN //	CHECKED A>S	MFG. APPR.	PPROVED NA	DE APPR.	
DATE 11.07	15 DATE 11.07.20	DATE 11.07.21 D	; / . / .	DATE 11.07.21	

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

item	Qty -141	Qty -141B	Part Number	Description
7	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023
ł	l		·	ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
L				TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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THE PREVAIL FOR MISSION FROM DART ARE POSPACE LTD.

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NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE															
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Vork Order:							DISPOSITION	AGAINST DEPARTMENT/PROCESS							
Part No.					Rework Scrap		Skid-tube Crosstube Machining Small Fab			Water Jet Engineering Prod. Eng. Coor. Quality					
NCR No.			Use-as-is Work Order Update		Thermoforming Finishing Rec/Store/Packaging Large Fab Composite Supplier					Other					
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		Crushed/Crimped Cuffs					Burrs Contamination		Inspection Incomplete Instructions Incomplete/Unclear					Wrong Stock Pulled	
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		Heat Treat					Countersink 4			Mislabeled		Positioned Wrong			
		Inspection Strip in Tube					Cut Too Short		Misread			Power Löss/Surge Other			
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Date:

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